

REMARKS

Applicants respectfully request reconsideration and further examination of the present application.

I. Amendments to the Claims

Prior to this Amendment A, claims 1-72 were pending, claims 73-89 having been previously canceled in response to a Restriction requirement. Claims 1-6, 9-19, 21, 22, 40, 41, 47-49, 52, 54-58 and 69-72 are presently under examination, while claims 7, 8, 20, 23-39, 42-46, 50, 51, 53 and 59-68 have been withdrawn from consideration at this time for being directed to nonelected species.

With this Amendment A, claim 1 has been amended to include the requirements of claim 11, now canceled. The amended claim calls for a process for preparing and screening an array of metal-ligand compositions wherein an array of polymerization mixtures is prepared by delivering a polymerization monomer to an array of metal-ligand compositions. The array of metal-ligand compositions is prepared by delivering a metal-binding ligand and a dissolved, soluble metal precursor to each of the plurality of reaction vessels of the array, wherein the soluble metal precursor comprises a solublizing ligand and one or more of the metal-ligand compositions is formed without displacing the solublizing ligand. Support for this amendment may be found in claims 1 and 11, as originally presented, as well as in the specification on, for example, page 5, lines 16-26 and page 6, line 31 to page 7, line 5.

Additionally, with this Amendment A, claims 12, 13 and 72 have also been cancelled, while claims 4, 5, 9, 14, 15, 41, 47, 56 and 57 have been amended for the purpose of correcting typographical errors, or to ensure proper antecedent basis and consistent use of terminology throughout the claims.

Finally, new claims 90-122 have been added. Claim 90 include the requirements of claim 13, now canceled. Support for the other new claims may be found in the specification, for example, as follows:

- claim 91: claim 13;
- claims 92-99: claims 3-10, respectively;
- claims 100 and 101: claims 14 and 15, respectively;
- claims 102 and 103: claims 18 and 20, respectively;
- claims 104-114: claims 38-48, respectively;
- claims 115-119: claims 53-57, respectively;
- claims 120 and 121: claims 62 and 63, respectively; and,
- claim 122: claim 70.

II. **Rejections under 35 U.S.C. §102**

A. *Rejection under 35 U.S.C. §102(b)*

Reconsideration is respectfully requested of the rejection of claims 1, 3 and 54-57 under 35 U.S.C. §102(b) as being anticipated by published PCT Application No. WO 98/12156 (hereinafter "Harvard College").

Claim 1, from which claims 3 and 54-57 depend, is directed to a process for preparing and screening an array of metal-ligand compositions. This process comprises:

preparing an array of metal-ligand compositions in a plurality of discrete reaction vessels contained by or within an integrated structure, wherein the plurality of reaction vessels of the array contain different metal-ligand compositions and said preparing comprises delivering a metal-binding ligand and a dissolved, soluble metal precursor to each of the plurality of reaction vessels of the array which combine to form the metal-ligand composition, wherein said soluble metal precursor comprises a solubilizing ligand and one or more of the metal-ligand compositions is formed without displacing said solubilizing ligand;

preparing an array of polymerization mixtures by delivering a polymerization monomer to the metal-ligand

compositions in the plurality of reaction vessels of the integrated structure;
subjecting the array of polymerization mixtures in the integrated structure to conditions conducive to the formation of a polymerization reaction product; and
screening said array for a polymerization reaction product.

Accordingly, it is to be noted that, in part, the present process calls for (i) the preparation of an array of metal-ligand compositions wherein one or more of these compositions is formed without a solublizing ligand being displaced from the soluble metal precursor, followed by (ii) the preparation of an array of polymerization mixtures by delivering a polymerization monomer to these metal-ligand compositions, such that these metal-ligand compositions can be screened in a polymerization reaction of interest.

Harvard College fails to disclose a process which satisfies each of the requirements of claim 1. More specifically, Harvard College fails to disclose a process which includes the preparation of an array of metal-ligand compositions using a soluble metal precursor, wherein as part of that preparation a solublizing ligand of the precursor is not displaced therefrom. Harvard College also fails to disclose a process wherein, once formed, the array of metal-ligand compositions is used to form a second array, which is the array of polymerization mixtures. Additionally, Harvard College fails to disclose a process wherein an array of polymerization mixtures, once formed, is subjected to conditions conducive to the formation of a polymerization reaction product. Finally, Harvard College fails to disclose such a process wherein, after being subject to such conditions, the array is screened for a polymerization reaction product.

Rather, Harvard College discloses the preparation of a library of chelating agents, or more generally potential binding moieties ("PBMs"), and screening that library to isolate or identify the member thereof that bind a metal, or a non-metal, atom.¹ Harvard College also discloses that the resulting compounds (e.g., organometallic compounds) may be evaluated as potential catalysts in, for example, a reaction

¹ See, e.g., Summary of the Invention, page 1, line 33, to page 2, line 2.

between trimethylsilyl cyanide and benzaldehyde (Example 2) or between epoxides and amines (Example 7).²

Furthermore, contrary to the Office's assertion that the library of potential binding moieties comprise two different classes of monomeric chemical components, it is to be noted that, as illustrated by Figure 1 therein, these components are not being used in a polymerization reaction to prepare a polymer, but rather are being used in more general, synthetic organic chemical reactions to prepare a molecule, or ligand, which ultimately binds the metal to form the organometallic, or metal-ligand, compound.³ Accordingly, Harvard College clearly does not disclose delivering a polymerization monomer *to* the array of metal-ligand compositions. As such, Harvard College also does not disclose screening the resulting array for a polymerization reaction product.

In view of the foregoing, claim 1 is respectfully submitted as novel over the cited reference. In as much as claims 3 and 54-57 depend directly or indirectly from claim 1, these claims are submitted as novel over the cited reference for at least the same reasons as those noted with respect to claim 1. Although claims 3 and 54-57 include additional novel features, these features will not be addressed at this time in the interests of brevity.

Additionally, new claim 90, from which claims 91-122 depend, is submitted as patentable over the cited reference, in as much as it, like claim 1, calls for delivering a polymerization monomer to the array of metal-ligand compositions to form an array of polymerization mixtures and screening the resulting array for a polymerization reaction product, as well as the additional requirement of converting the ligands displaced from the soluble metal precursors to a form which does not significantly inhibit the subsequent polymerization reaction.

² See, e.g., page 5, lines 10-16, page 42, lines 10-13, and page 44, lines 15-27.

³ See the top of page 5 of the present action, and additionally page 17, lines 7-18 of Harvard College, wherein repeated references are made to metal binding and the use of the "monomeric chemical components" to prepare the *molecule* which coordinates the metal (line 18).

B. Rejection under 35 U.S.C. §102(e)

Reconsideration is respectfully requested of the rejection of claims 1-6, 10, 14-19, 22, 47-49, 52 and 54-57 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,030,917 (hereinafter "Weinberg et al.").

As previously noted, claim 1, from which claims 2-6, 10, 14-19, 22, 47-49, 52 and 54-57 depend, is directed to a process for preparing and screening an array of metal-ligand compositions. In relevant part, the present process calls for the preparation of an array of metal-ligand compositions by combining a metal-binding ligand and a soluble metal precursor, wherein one or more of these compositions is formed without a solublizing ligand being displaced from the soluble metal precursor. An array of polymerization mixtures is subsequently prepared by delivering a polymerization monomer to these metal-ligand compositions, such that these metal-ligand compositions can be screened using a polymerization reaction of interest.

Weinberg et al. fail to disclose a process which satisfies each of the specifically defined requirements of claim 1. Specifically, Weinberg et al. fail to disclose a process wherein an array of metal-ligand compositions is prepared by combining a metal-binding ligand and a soluble metal precursor, with one or more of these compositions being formed without a solublizing ligand being displaced from the soluble metal precursor. Rather, Weinberg et al. more generally disclose the preparation of an array of metal-ligand compounds, and then screen these compounds in, for example, polymerization reactions of interest.

In view of the foregoing, claim 1 is respectfully submitted as novel over the cited reference. In as much as claims 2-6, 14-19, 22, 47-49, 52 and 54-57 depend directly or indirectly from claim 1, these claims are submitted as novel over the cited reference for at least the same reasons as those noted with respect to claim 1. Although claims 2-6, 14-19, 22, 47-49, 52 and 54-57 include additional novel features, these features will not be addressed at this time in the interests of brevity.

Additionally, new claim 90, from which claims 91-122 depend, is submitted as patentable over the cited reference, in as Weinberg et al. fail to disclose a process wherein an array of metal-ligand compositions is prepared by combining a metal-

binding ligand and a soluble metal precursor, the formation of one or more of these compositions being accompanied by the displacement of a solublizing ligand from the soluble metal precursor which is subsequently converted to a form that does not significantly inhibit a polymerization reaction of interest.

III. Rejection Under 35 U.S.C. §103

Reconsideration is respectfully requested of the rejection claims 1-6, 9, 10, 14-19, 21, 22, 40, 41, 47-49, 52, 54-58 and 69 under 35 U.S.C. §103 as being obvious based on Harvard College in view of U.S. Patent No. 6,309,997 (hereinafter "Fujita et al."). Reconsideration is further requested of the rejection of claims 70 and 71 as being obvious based on Harvard College in view of Fujita et al. and U.S. Patent No. 5,892,075 (hereinafter "Murata et al.").

As previously noted, in relevant part, claim 1 is directed to a process which calls for (i) the preparation of an array of metal-ligand compositions wherein one or more of these compositions is formed without a solublizing ligand being displaced from the soluble metal precursor, followed by (ii) the preparation of an array of polymerization mixtures by delivering a polymerization monomer to these metal-ligand compositions, such that these metal-ligand compositions can be screened in a polymerization reaction of interest.

Accordingly, Harvard College fails to disclose or suggest a number of the requirements of claim 1. Specifically, Harvard College fails to disclose or suggest:

- a process which includes the preparation of an array of metal-ligand compositions using a soluble metal precursor, wherein as part of that preparation a solublizing ligand of the precursor is not displaced therefrom;
- a process wherein, once formed, the array of metal-ligand compositions is used to form a second array, which is the array of polymerization mixtures;

- a process wherein an array of polymerization mixtures, once formed, is subjected to conditions conducive to the formation of a polymerization reaction product; and,
- a process wherein, after being subject to such conditions, the array of polymerization mixtures is screened for a polymerization reaction product.

The addition of Fujita et al. and/or Murata et al. does nothing to address the failures of the Harvard College disclosure. Fujita et al. and Murata et al. are unrelated to the field of combinatorial research, and thus to the preparation of arrays of compositions and mixtures used therein.⁴ Rather, these references are simply generally directed to compounds suitable for use as catalysts in olefin polymerization, and to the preparation and/or use of these compounds.⁵ As such, Fujita et al. and Murata et al. clearly fail to disclose or suggest a process involving the formation of an array of metal-ligand compositions, the formation of an array of polymerization mixtures using an array of metal-ligand compositions, or to the screening of an array of polymerization mixtures for a polymerization reaction product, after such an array has been subjected to conditions conducive to the formation of such a product. Even more notable is the failure of Fujita et al. and Murata et al., like Harvard College, to disclose or suggest a process involving the preparation of an array of metal-ligand compositions using a soluble metal precursor, wherein as part of that preparation a solubilizing ligand of the precursor is not displaced therefrom.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. And third, the prior art reference must teach or suggest all the claim limitations. MPEP §2142.

⁴ For example, neither reference mentions the formation of an array or library of metal-ligand compositions, or polymerization mixtures, in a plurality of discrete reaction vessels contained by, or within, an integrated structure, as required by claim 1, as well as new claim 90.

⁵ See, for example, Fujita et al. at column 1, lines 8-11 and column 2, lines 26-33, and Murata et al. at column 1, lines 5-8 and column 2, lines 8-15.

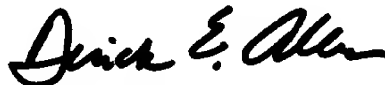
In the instant case, Applicants respectfully submit the invention as defined claim 1 is not obvious, because the prior art references cited by the Office, both individually and collectively, fail to disclose or suggest each of the requirements therein, as detailed above. Accordingly, claim 1 is submitted as patentable over Harvard College in view Fujita et al. and/or Murata et al. In as much as claims 2-6, 9, 10, 14-19, 21, 22, 40, 41, 47-49, 52 and 54-58, 69-71 depend directly or indirectly from claim 1, these claims are submitted as patentable over the cited references for the same reasons as those set forth with respect to claim 1.

Applicants further submit that new claim 90, from which claims 91-122 depend, is patentable over the cited reference, in as much as the prior art references cited by the Office, both individually and collectively, also fail to disclose or suggest each of the requirements therein. More specifically, claim 90, like claim 1, is directed to a process involving the formation of an array of metal-ligand compositions, the formation of an array of polymerization mixtures using an array of metal-ligand compositions, and the screening of an array of polymerization mixtures for a polymerization reaction product, after such an array has been subjected to conditions conducive to the formation of such a product. As noted above, these requirements are simply not disclosed or suggested by the cited combination of references. Furthermore, this combination of references also does not disclose or suggest the additional requirement of claim 90, which is the conversion a ligand, displaced from the soluble metal precursor, to a form which does not significantly inhibit the polymerization reaction of interest.

CONCLUSION

* Applicants enclose herewith a check in the amount of \$636.00 to cover a two (2) month extension of time, and the twelve additional dependent claims submitted herein. The Commissioner is hereby authorized to charge any underpayment or credit any overpayment to Deposit Account No. 19-1345.

Respectfully submitted,



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